REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Upon entry of the above amendments, claims 1-21, as renumbered and amended, will remain pending in the application. Claims 22-27 are added. Applicants thank the Examiner for renumbering claims 16-22 as claims 15-21 (as a precaution, the dependencies of the renumbered claims are changed accordingly).

Claims 1, 13 and 15 are each amended to more particularly set forth the subject matters which Applicants regard as their invention and distinguish over the cited prior art.

In particular, claim 1 is amended to incorporate the subject matter of original claim 3 (which in turn is amended to set forth the more preferred lower value for the rubber content in the matrix polymer B (masterbatch) as disclosed on page 5, line 2.

Claim 1 is further amended to clarify that each of the polymer matrix A and the masterbatch are initially combined in solid form. Support for this language is found throughout the specification, e.g., page 8, lines 4-5.

Other amendments in claim 1 respond to the formal grounds of rejection, as discussed below.

Claims 13 and 15 are amended by incorporating the subject matter of claim 18 (which in turn is amended to change "and/or" to --and--) as well as to address the formal grounds of rejection. Claim 13 is further amended to clarify that the composition is a solid and that the first matrix polymer is polyester, polyacetal or polycarbonate (see, e.g., page 3, lines 4-5).

New claims 22-24 are supported by the original claims and the disclosure on page 5, lines 2-4.

Claim 25 is similar to claim 1 but further emphasizes that the solid polymer matrix A and the solid masterbatch (rubber composition in matrix polymer B) are fed to an extruder and are melt-mixed in the extruder. Claim 26 corresponds to original claim 18 (renumbered) but is dependent on new claim 25.

Thus, according to claims 25-26, the solid masterbatch is prepared separately from polymer matrix A and outside the melt-mixer.

Claim 27 is directed to an alternative embodiment of the solid composition (corresponding to claim 13) wherein the rubber composition consists of a non-functionalized rubber and a functionalized form of the same rubber. The composition may optionally include one or more of the auxiliary agents or additives as suggested in the paragraph bridging pages 6-7.

A new Abstract as a single paragraph, attached on a separate sheet, is also being filed.

Accordingly, none of the amendments introduce new matter into the application.

Claim Rejections - 35 USC § 112

The term "functionalized" is defined in accordance with the disclosure on page 3, lines 16-18.

Claim 1 clarifies that the "matrix polymer" at the end of the claim, refers to the total amount of the matrix polymers A plus B. This follows from the description, e.g., on page 1, first paragraph.

In claims 10 and 20, the term "functionalized" is inserted to clarify that the stated rubber is functionalized.

Claim 14 is amended by changing "obtainable" to --obtained--.

In view of the foregoing, the claims are now believed to be in compliance with 35 USC 112 and withdrawal of the formal grounds for rejection is requested.

Claim Rejections - 35 USC § 102/103

The rejection of claims 1-6, 8, 9, 11-18, 20 and 21, over US 5,889,112 (Shih et al) is respectfully traversed and/or avoided for at least the following reasons.

As now recited in claims 1-6, 8, 9, 11 and 12, the matrix polymer A and the composition of the functionalized and non-functionalized rubber in matrix polymer B, are melt blended from the solid state.

This is totally contrary to the process of Shih et al which specifically avoids a solids mixing process (see, e.g., columns 1-2) and uses an "all-melt process" (see, *e.g.* col. 2, lines 44-46), which is, more particularly, an all-melt stage-feed process. That is, whereas the process of Shih et al requires the use of an expensive set of extruders for at least three molten streams, the process according to the present invention is able to form the impact-resistant polymer composition in a single extruder. Note, in particular, that in Example 1, wherein a matrix polymer is mixed with a functionalized rubber by adding both in solid form to a mixer, the Example is categorized as a "control" and resulted in dispersions with mean particle size of 0.60 microns, in contrast to the results of the all-melt stage feed process of Example 2-6 which yielded average particle sizes ranging from 0.69 to 1.65 microns.

For all of the above reasons, claims 1-6, 8, 9 and 11-12 are neither anticipated by nor obvious over Shih et al. The same applies to new claims 22 and 25-26.

Regarding the composition of claim 13, (and new claim 23) there is no anticipation for at least the reason that there is no disclosure of the functionalized and/or non-functionalized rubber comprising ethylene-α-olefin copolymer obtained by polymerization in the presence of a metallocene catalyst.

Furthermore, the use of metallocene catalyzed rubbers would not have been obvious, notwithstanding that Shih et al does not disclose not using a metallocene catalyzed rubber. Having a broad disclosure of rubbers does not make any and all specific types and classes of rubbery materials prima facie obvious. Moreover, comparing the properties of Compositions 8, 10 and 13 (using at least one Exact® plastomer rubber) with the properties of the Composition 6 (using EPDM rubber), it will be appreciated that the former have improved creep properties. This feature is not suggested by Shih et al.

Furthermore, claim 13 (and new claim 23) recite that the composition is solid. Since there is no disclosure of forming a solid composition wherein rubber is dispersed in a polymer matrix and useful for subsequent melt-blending with another matrix polymer to form impact-resistant polymer composition, claims 13 and 23 are neither anticipated by nor obvious in view of Shih et al.

Accordingly, claims 13 and 23 are believed to be in condition for allowance.

With regard to the granules of claims 15-18, and the objects obtained therefrom (claims 20-21), it is not seen that granules are produced or intended to be produced by the method of Shih et al. Here too, the claims now recite the feature of former claim 18 and, as noted with regard to claim 13, nothing in the disclosure of Shih et al suggests using the metallocene catalyzed rubbers much less the improvement in creep obtained thereby.

Accordingly, withdrawal of the rejection of claims 15-21 as anticipated by or obvious in view of Shih et al is respectfully requested.

Claim 13 is also rejected as anticipated by or obvious in view of EP 0878510 (EP 510).

Reconsideration and withdrawal of this rejection is respectfully requested.

As noted above, claim 13 is directed to the embodiment wherein the first matrix polymer in which the rubber composition is dispersed is a polyester, polyacetal or polycarbonate.

Accordingly, since only polyamide compositions are disclosed in EP 0 878 510, this rejection is respectfully traversed and/or avoided.

With regard to new claim 27, the disclosure of EP 0 878 510 requires that the polyamide be blended with a rubber composition comprising (B) a modified (functionalized)

ethylene/α-olefin copolymer having an ethylene content of 40-93 mole%; with (C) at least one ethylenic copolymer (C-1) having an olefin content of 10 mole% or less or a graft-modified derivative thereof (C-2).

Accordingly, the polyamide compositions of EP 0 878 510 do not anticipate or make obvious the subject matter of claim 27, wherein the dispersed rubber consists of a non-functionalized rubber and a functionalized derivative thereof.

Therefore, neither claim 13 or new claims 23 and 27, are anticipated by or obvious in view of EP 0 878 510.

Accordingly, the amended and new claims are in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Attached is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

Pillsbury Winthrop LLP

By: Richard A. Steinberg

Richard A. Steinberg
Reg. No.: 26,588
Tel. No.: (703) 905-2039
Fax No.: (703) 905-2500

Paul L. Sharer
Reg. No.: 36,004
Tel. No.: (703) 905-2180

RAS\
1600 Tysons Boulevard
McLean, VA 22102

(703) 905-2000
Enclosure: Appendix

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (Amended) Process for the preparation of an impact-resistant polymer composition comprising a rubber composition dispersed in a matrix polymer, said process comprising melt mixing a solid matrix polymer A with a solid comprising said rubber composition dispersed in a matrix polymer B at a weight ratio of matrix polymer B to rubber composition in the range of 80:20 to 30:70, wherein the solid dispersion of said rubber composition in matrix polymer B is the product obtained by melt mixing of matrix polymer B with a rubber composition that contains at least one functionalized rubber containing groups that can react with matrix polymer A and/or B, and at least one non-functionalized rubber and wherein said impact-resistant rubber composition comprises 0.5-75 parts by weight of rubber composition per 100 parts by weight in total of matrix [polymer] polymers A and B.

2. (Unchanged) Process according to claim 1, wherein matrix polymer B is identical to matrix polymer A.

3. (Amended) Process according to claim 1, wherein the weight ratio of matrix B to rubber composition lies between [80:20] 60:40 and 30:70.

4. (Amended) Process according to claim [3] 1, wherein the functionalized rubber is present as a shell around a core of the non-functionalized rubber.

5. (Unchanged) Process according to claim 1, wherein the functionalized rubber is derived from a rubber that is different from the non-functionalized rubber.

6. (Unchanged) Process according to claim 3, wherein the non-functionalized rubber is an ethylene (C4-C12) α-olefin copolymer rubber.

7. (Unchanged) Process according to claim 6, wherein the ethylene- α-olefin copolymer is obtained by polymerization in the presence of a metallocene catalyst.

8. (Unchanged) Process according to claim 1, wherein the matrix polymers A and B are selected from the group consisting of polyamides, polyesters, polyacetals and polycarbonates.

9. (Unchanged) Process according to claim 8, wherein the matrix polymers are each polyamides.

10. (Amended) Process according to claim 1, wherein the functionalized rubber comprises a functionalized styrene-butadiene tri-block polymer.

11. (Unchanged) Process according to claim 1, wherein the functionalized rubbers are obtained by reaction with or by graft polymerization of a rubber with an unsaturated dicarboxylic acid anhydride, an unsaturated dicarboxylic acid or an unsaturated dicarboxylic acid ester.

12. (Unchanged) Process according to claim 1, wherein the rubber is not crosslinked.

13. (Amended) A solid composition comprising a dispersed rubber composition in a first matrix polymer, the dispersed rubber composition containing at least one functionalized rubber and at least one non-functionalized rubber, whereby said composition may be mixed with a composition comprising a second matrix polymer to form an impact-resistant polymer composition, wherein said functionalized rubber contains groups that can react with said first and/or said second matrix polymer and wherein at least one of the functionalized rubber and/or the non-functionalized rubber comprises ethylene-α-olefin copolymer obtained by polymerization in the presence of a metallocene catalyst, and further wherein the first matrix polymer is a polyester, polyacetal or polycarbonate.

14. (Amended) Impact-resistant polymer composition [obtainable] obtained by the process according to claim 1.

15. (Renumbered) (Amended) Granule mixture comprising a matrix polymer A and a matrix polymer B in which a rubber composition is dispersed wherein the rubber composition contains at least one functionalized rubber containing groups that can react with at least one of matrix polymer A and matrix polymer B and at least one non-functionalized rubber wherein at least one of the functionalized rubber and/or the non-functionalized rubber comprises ethylene-α-olefin copolymer obtained by polymerization in the presence of a metallocene catalyst.

16. (Renumbered) (Amended) Granule mixture according to claim [16] 15, wherein the matrix polymer B is identical to matrix polymer A.

17. (Renumbered) (Amended) Granule mixture according to claim [16] 15, wherein the rubber composition is dispersed in a matrix polymer B and the functionalized rubber is present as a shell around the core of the non-functionalized rubber.

18. (Renumbered) (Amended) Granule mixture according to claim 16, wherein the functionalized rubber [and/or] and the non-functionalized rubber comprises ethylene-α-olefin copolymer obtained by polymerization in the presence of a metallocene catalyst.

19. (Renumbered) (Amended) Granule mixture according to claim [16] 15, wherein the functionalized rubber and/or the non-functionalized rubber comprises a functionalized styrene-butadiene tri-block copolymer.

20. (Renumbered) (Amended) Object shaped from the melt of the granule mixture according to claim [16] 15.

21. (Renumbered) (Amended) Object according to claim [21] 20, wherein the functionalized rubber is present as a shell around a core of non-functionalized rubber.

IN THE ABSTRACT

A new revised Abstract is provided, as a single paragraph, on a separate sheet, attached hereto.

End of Appendix

ABSTRACT OF THE DISCLOSURE

An impact-resistant polymer composition exhibiting improved impact resistance at no loss in creep is obtained by melt-mixing a solid matrix polymer A with a solid composition containing the rubber composition dispersed in a matrix polymer B. The dispersion of rubber composition in matrix polymer B is obtained by melt mixing the matrix polymer B with a rubber composition which includes a functionalized rubber and a non-functionalized rubber. The amounts of the components are such that the impact-resistant polymer composition contains 0.5 to 75 parts by weight of the rubber composition per 100 parts by weight of the matrix polymers A and B. The composition may be used in various applications, including plugs, heat bridges for aluminum windows, hammer heads and the like.